

# The Highwayman

Route No. 2 Roebling-Burlington

The Highwayman Is Out  
For More and Better Roads  
in New Jersey

August, 1922  
Vol. II  
No. 1

## Detour But Follow the Arrow!

Below, you will find the photographs of the members of the State Highway Commission, and of the State Highway Engineer.

In former issues of the HIGHWAYMAN you have read the story of each of these men. None of them were born "with a silver spoon." Several of them, through their early days, had as hard a struggle as any man on the Highway Department forces.

Study the faces below, and you will find a wide difference in the features. But one thing they have in common shows plainly enough—DETERMINATION.

You don't have to be an expert character reader to get that—any school-boy could tell it.

Every one of these men, fairly early in life, acquired a *purpose*—a fixed, fairly definite goal which he aimed at (just as you, perhaps have done.)

Then the time came when the road he wanted to travel, was blocked. The word "DETOUR" stared him in the face. The main road was *closed*. (That, also, happens to most of us.)

But being forced to "detour" never spells failure—if you *know where you are going and follow the arrow!*

If, when you find the easy main road blocked and a "detour" necessary, you do not have a definite goal—if you do not follow the arrow of a *fixed purpose*—you will soon find yourself wandering around aimlessly in the by-roads, getting nowhere.

Study the story of any successful man, and you will find that he did not have a paved Highway to Success. Often, he had to "detour". But—always he *followed the arrow!*

The detours did not keep him from arriving.



Back Row—left to right—Commissioners Whittemore, Paddock and Burton; State Highway Engineer Wasser  
Front Row—Commissioners Doughty, Seabrook, Collins, Ferris and Duffy.



# The Highwayman

## The Highwayman

Published Monthly By The  
State Highway Department, at Trenton, N. J.  
The HIGHWAYMAN will be sent free upon application  
to any citizen of New Jersey who is interested in  
"More and Better Roads For New Jersey!"

### THE HIGHWAYMAN

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## Does the Highwayman Fill the Want

This is the twelfth monthly issue of the HIGHWAYMAN. We are anxious to know what the readers, including the Press and other interested parties, think of the one-year-old publication.

We earnestly solicit comments, in order to determine our policy regarding the continuance of a publication which is intended to keep the public informed regarding the activities of the Department and foster harmonious relations and efficiency of the personnel of the Department.



## U. S. to Lead the World in Superior Highways

Federal and State engineers are now mapping out a system of highways to serve the whole country and which will be far superior to any other in the world. The Federal Highway Act specially requires that all Federal Aid be spent on a connected system of highways consisting of not more than 7 per cent of the road mileage in each State and that this system shall consist of interstate or primary roads and intercounty or secondary roads. Proposed systems have been received by the Bureau of Public Roads from all but eight States. They are plotted on a large map of the United States and carefully examined as to the coordination of systems of adjacent States and service to all sections of the whole country. Where coordination is not satisfactory conferences are held with all interested State highway officials and routes adjusted. Many States have already adjusted difficult problems with their neighbors. As an example, the system sent in by Nebraska showed a big gap in an important road along the Northern boundary. It was learned that South Dakota would follow with a system which would fit like pictures on toy blocks. Since the Federal Highway Act of last November became a law, only roads certain to be on the system have been approved for construction. It is estimated that the system will comprise 180,000 miles of road 60,000 of which is already constructed.—*Highway News Digest.*



**Thomas J. George**  
Supervisor of State Labor

To T. J. George belongs a big part of the credit for having put through so successfully the Budd Lake job which as you know was handled with state labor forces.

This job, of which we have shown several photographs, in the HIGHWAYMAN, has been a great credit to the Highway Department.

Mr. George got his education in the public schools of Newark, New Jersey, and upon completing his work there went as an apprentice with the firm of Van Dwyne & Young, Surveyors. He worked with this firm for a period of six years. Mr. George then joined B. M. & J. F. Shanley Company, General Contractors, as superintendent. While with them he had charge of the job of changing over the tracks from Horse Car Railroad to Electric Railroad in Newark and Paterson. He also had charge of the construction of the Bloomfield and Montclair trolley lines, and of many miles of state aid roads in Monmouth, Middlesex, Morris and Sussex Counties, including Norwood Avenue on Route 4, Stockholm to Franklin on Route 8, the Freehold to Manalpan Road on Route 7, and Corlies Avenue, on Route 7.

Mr. George joined the forces of the State Highway Department in April, 1921, and was appointed acting supervisor of state labor in December, 1921, in which capacity he has been giving splendid service to the taxpayers of the state. He became Supervisor of State Labor on August 9, 1922.



## Advance Notice on State Highway Convention

The State Highway Commission at its meeting held on July 17th authorized the holding of the Third Annual Convention of the New Jersey State Highway Department. It is the purpose to hold this convention February 4th to 17th, 1923, at the Stacy-Trent Hotel, Trenton, New Jersey.

The Arrangements Committee has received suggestions from several sources that it arrange for exhibits for road materials and equipment companies. It is the Committee's desire to learn just what the attitude of the material men and equipment men is toward this matter of exhibiting at the Convention. The exhibits must, of course, be limited in scope by the fact that the exhibition space will be on the Ball Room floor, at the Stacy-Trent Hotel.

The Committee would appreciate an expression of opinion from the readers of THE HIGHWAYMAN concerning this matter of exhibits.

It is the purpose of the Committee to have the Annual Banquet on the night of Thursday, February 15th. Further details will be furnished later. Rest assured that it is the purpose of the Committee to avoid the last minute rush at the next Convention.

Feelers have already been put out for the men we want to maintain the usual high standard of papers presented.

Note the dates! February 14, 15, 16 and 17, 1922.





**James Henry Litchfield**

James Henry Litchfield, Construction Inspector with the Bridge Division of the State Highway Department, died in the Chapin Memorial Hospital, Springfield, Massachusetts, on July 16th, following an operation for duodenal ulcer.

Mr. Litchfield, who had been employed by the Bridge Division since April 1st, 1921, was born at Leominster, Mass., March 31st, 1889, and was graduated from Holden (Mass.) High School in 1905. Following a post-graduate course, he entered Worcester Polytechnic Institute in 1907, where he pursued the course in Civil Engineering for two years. He then accepted a position as resident engineer on a hydro-electric development for W. D. Thompson, Inc., of Worcester, Mass. In the summer of 1910 he was employed as resident engineer with Durkee, White and Towne, engineers of Springfield, Mass. In this capacity his duties included surveys for railroad locations and water supply systems. From 1912 to 1915 Mr. Litchfield was employed as an engineer in the office of the City Engineer, Westfield, Mass. From 1915 to 1918 he had charge of the engineering offices of O. E. Parks of Westfield.

In 1918 he accepted a position as resident engineer with H. F. Dunham, consulting engineer of New York, on a power development project at Newmarket, N. H. He relinquished this position in the fall of 1920 when he became identified with T. I. Ellis, Contractor, Providence, R. I., as office engineer and construction superintendent on concrete structures. Upon completion of his work with Mr. Ellis, he accepted the position as Bridge Construction Inspector with the State Highway Department. At the time of his death Mr. Litchfield was on a three months' leave of absence.

In the spring of 1911 he married Miss Viva J. Tucker of Russell, Mass., who survives him. Beside his widow, he leaves a mother and three sisters. At the funeral, which was held from the home of Mrs. Litchfield's parents in Russell, the sympathies of Mr. Vogel, Bridge Engineer, and the employees of the Bridge Division, were expressed by beautiful floral tributes. Burial was at Russell.

Although he made few intimate friends, the men who knew Jim Litchfield well, will feel his loss most keenly for he was a man of sterling character and high ideals.

Trenton, New Jersey.  
July 22, 1922.

NEW JERSEY HIGHWAYMAN:

Editor:—I desire to take this opportunity to express my sincere appreciation for the sympathy extended and for the beautiful floral offering from Mr. Vogel and the employees of the Bridge Division.

Sincerely,

VIVA J. LITCHFIELD.

## NEW JERSEY STATE HIGHWAY DEPARTMENT

August 1, 1922

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HON. EDWARD I. EDWARDS, Governor

The State Highway Commission  
and

THOMAS J. WASSER, State Highway Engineer

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G. R. MOORE, Ass't Construction Engineer

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JOHN L. VOGEL - - - - Bridge Engineer  
THOMAS GEORGE - - - - Supervisor of State Labor  
C. A. BURN - - - - Northern Division Engineer  
H. D. ROBBINS - - - - Central Division Engineer  
J. A. WILLIAMS - - - - Southern Division Engineer  
L. F. HALL - - - - Chief Draftsman

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A. D. BULLOCK - - - - Projects Engineer  
H. C. SHINN - - - - Engineer of Special Assignments

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F. D. WOODRUFF - - - Assistant Supt. of Maintenance  
E. M. STORER - - - - Chief Inspector

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N. C. APPLEGATE - Asst. Supt. of Plants and Equipment  
J. J. TYMAN - Asst. Supt. of Plants and Equipment  
F. M. DEVEREAUX - Asst. Supt. of Plants and Equipment

### TESTING LABORATORY

R. B. GAGE, Chemical Engineer

J. G. BRAGG - - - - Senior Testing Engineer  
F. H. BAUMANN - - - - Senior Testing Chemist

## A Modern Engine of Mercury

BY SAMUEL HOPKINS ADAMS

The first domesticated cow is credited with having been the engineer who laid out the first road. Not an ancient city in Europe but testifies, in the tangled intricacies of its streets, to the vagaries of that cow's descendants.

Men improved progressively upon the bovine methods of highway establishment until his chosen pathways were bedded in rock, lined with steel and patrolled by monsters that outsped the winds of heaven. With the railroads, said prideful man, had come the last word in the spread of highways. Then the automobile loomed up, and where this modern engine of mercury goes, roads unroll before it like the magic carpet before the feet of the djinn. From Greeland to Patagonia it imperatively demands passage-way to its unknown goal beyond the ridges. American-inspired associations in Japan, in Australia, in the Argentine, at the Cape of Good Hope preach the gospel of the wheel-bearing path to Everywhere.

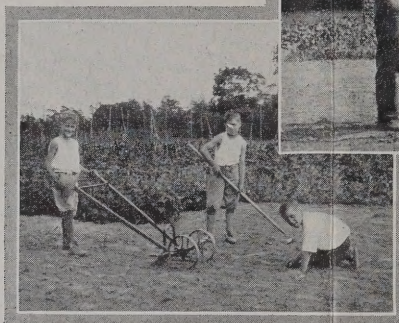
Propaganda—this is pure propaganda—primarily in the interest of business, but by indirection, and more important, for that solidarity which binds communities together and dissolves barriers between Nations.

The history-old engineering which began with milk, ends with gasoline.—*Highway News Digest.*



# The Highwayman

"Old H. C." himself—from an "officially approved" photograph. Harry's "special assignment" in this case being to push that No. 25 Planet Junior wheel hoe.



The Manager's three chief assistants, who really do the work. Just between you and us, anybody could see that "Harry" was only posing above.

## "H. C." Shinn, Manager of Homestead Farms and Engineer of Special Assignments

Somewhere in the official records of Lakewood, New Jersey, you will find that "H. C." S. once stood for Harry Clinton Shinn—but that has long since been forgotten by everyone except those most directly interested. H. C., who is sometimes known as "Harry" admits on close examination that he was born in Lakewood, New Jersey. This fact alone should be sufficient proof of the high regard in which H. C. holds "truth, the whole truth and nothing but the truth."

Harry started his engineering experience with the Lakewood Water, Light and Power Company, in 1905. Subsequent engagements in the engineering field found him in March, 1912, employed with the DuPont Powder Company, with which company he held a responsible position in the layout, arrangement and studies for extensive powder plant development, construction of railroad sidings, pipe lines, etc. Leaving the DuPont Powder Company he carried on private practice in Bernardsville, N. J. In 1918 he was appointed County Engineer of Ocean County. He resigned this position to become connected with the State

Highway Department. While with the Department he has held the position of Assistant Engineer, Assistant Division Engineer of the Central Division, Supervisor of State Labor, and Engineer of Special Assignments, which is his present position.

We nearly forgot to mention that "Harry" was at one time a salesman. We do not know why he does not mention this in his autobiography for we are sure he could make a success of anything that he tackled.

This is best exemplified by his recent agricultural achievements. With the aid of a "Planet Junior" No. 25, and Skinner overhead irrigation, he has succeeded in raising a wonderful vegetable garden. "H. C." claims that the former machine almost surpasses the "Puddle Jumper" as a source of pleasure. The irrigation system is held largely responsible for the recent heavy rains. Besides being able to raise enough vegetables to supply Lakewood proper, he has raised four fine healthy boys. Harry is a student of human nature and is the greatest little arguer we know of. He is enthusiastic, full of "pep" and a fine fellow.

### Paving Inspection

The first requisite for proper relations between the engineer and the contractor is clearly worded specifications. Every clause should be expressed in good English. Specifications which need constant interpretation and frequent appeals by the inspector to the engineer cause delays, and therefore loss of money to the contractor.

#### Co-operation Between Inspector and Foreman

The contractor's foreman or superintendent, to be of any use, must be a man who can overcome obstacles and meet emergencies as they arise. He, therefore, is likely to resent what he considers constant interference with his work by an inspector who is not only young, and inexperienced, but perhaps undiplomatic as well. On the other hand where the inspector's suggestions and orders are given in a sensible way and with a real desire for co-operation, they ought to be received in the right way, for the foreman or superintendent who engages in constant disputes with the inspector may be wholly unfitted to bring about the co-operation which the contractor desires with his customers. *Of course there are contractors who do not read the specifications before they bid.* In other words, they do not really know what is expected of them and only trouble can be expected from any such situation as this. But where the inspector takes the attitude that he is there not only to see that the job is done in accordance with the specifications, but to make the job go along quickly and smoothly, the relations between him and the contractor are bound to be harmonious, and without harmony no organization can possibly work as it ought.

#### Inspector's Interpretation of Specifications

With regards to the inspector's interpretation of the specifications, it cannot be too strongly stated that all specifications must be interpreted with common sense. If he is supervising the laying of granite block pavement, he must realize that these blocks are not pieces of mosaic. To be unduly careful about the straightness of the rows, or the widths of the blocks in the rows or the wideness of the joints, and then not to see that the cement grout is properly mixed and placed is to show lack of knowledge as to where to make the contractor live up to a literal interpretation of the specifications.

This same idea applies to those above the inspector. If every time the engineer visits the job he talks about something that is wrong—especially if it is some small matter—and rarely says anything about what is right, he soon gets the reputation of being impractical, and he probably is. If that foreman or superintendent is worth anything at all, the job he is running is to him the greatest job there is, and to have someone find fault with some minor point discourages him and results in no good. Not that a man should be constantly praised, for that is surely not good, but a word of encouragement at times will often do more than fault finding to bring about a desire on the part of the contractor's foreman to do his best, which is surely what every engineer wishes. The contractor's superintendent or foreman should be led to look to the engineer as a man having superior knowledge along certain lines, and not simply as a kind of super-censor whose principal job is to find fault.—*Engineer in Charge Contracting.*



## Building Better Bridges

### Bridge Foundations

The security of any engineering structure, whether a road, a building or a bridge, depends primarily upon the security of its foundations.

Foundations are subject to various stresses, brought about by the purpose which the structure serves. Bridge foundations, in particular, are subject to the stresses caused by the bridge structure itself, or dead load, and the additional load of vehicles or pedestrians passing over the bridge, or live load. Tendency of the earth fill behind an abutment to push or slide it upon the foundation is another stress which must be met in a proper design. In the case of an arch bridge this push or thrust may act in the opposite direction, causing the foundation to slide into the adjacent earth, and allow the arch to collapse. Still another condition, that of scour, must be given serious consideration. Scour is the action of the stream which undermines the foundations by washing away the soil under them. Recent failures of three large bridges in different sections of the country (one with a heavy toll of lives) have been traced to the undermining of the foundations by scour. To this number might be added scores of small bridges which are carried away by floods and high water each year.

Several types of foundations are used in bridge construction, but the ordinary conditions can usually be met, either by a concrete spread footing on good firm soil or by the use of piles if the bearing power of the soil is inadequate to carry the load. In either case the footing course is carried well below the bed of the stream to prevent scour, and sometimes a cut-off wall on the stream side of the abutment is carried below the foundations proper as an additional protection. In the larger and more important structures, the bearing power is determined by borings taken at the site before the bridge is designed.

Cofferdams of wood or steel sheeting are driven around the foundations to support the adjoining earth, exclude the water and permit of pumping and excavating. Especial attention is required in the installation of coffer dams, in order that they may be as nearly water tight as possible, thus allowing the placing of concrete on a dry foundation bed. Cofferdams should also be built sufficiently large to allow for the building of concrete forms inside of them, thereby leaving a space for pumping between the forms and the sheeting. Extreme care should be exercised in the interior bracing, as the pressure of earth and water may cause the collapse of an improperly braced dam.

Excavation should be entirely completed before driving of piles, and the foundation pit preferably kept dry during driving. While this is not absolutely necessary, it permits better observation of the action of the hammer, and the condition of the pile being driven. The bearing power of the piles is determined from the *Engineering News* formula and averages from 14 to 20 tons per pile. This bearing value is so computed that if the bridge were to suffer from the action of scour, the piles, acting as columns, would safely support the structure until the foundations could be repaired.

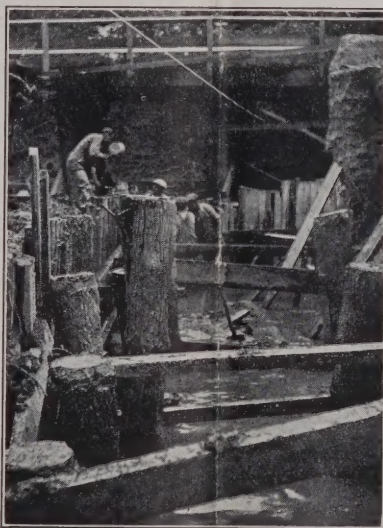
Following the proper driving of the piles, the heads are sawed off level at a height of from six to twelve inches above the bottom of the footing course. The foundation is now ready for concrete; care must be used in working the concrete around the heads of the piles and pumping continued until concrete is in place.

With a proper realization of the importance of bridge foundations and the exercise of due care in their contribution, the bridges now being built by the State Highway Department should safely withstand the traffic demands of this generation as well as any flood conditions to which they may ever be subjected.

JAS. H. HYNES,

Bridge Construction Inspector,

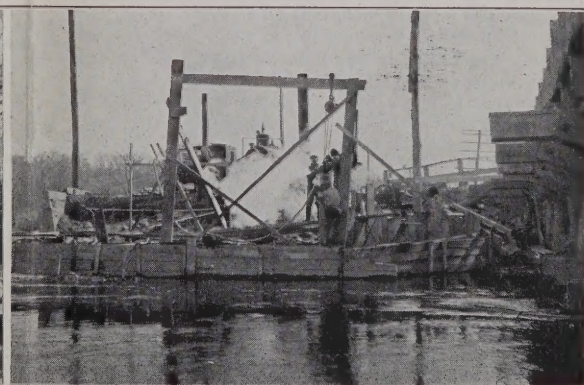
N. J. State Highway Dept.



Driving sheeting for cofferdam at East Abutment, showing bracing piles before cutting off to given grade.  
(Bridge No. 84, Route 12, Section 1)

### Value of Federal Aid and Praise for Mr. MacDonald

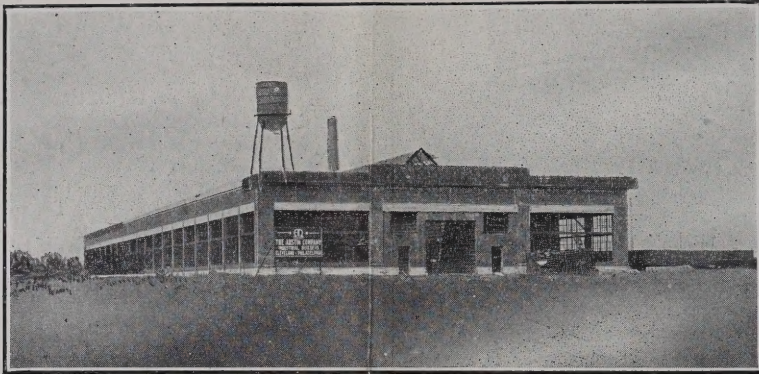
To those who have doubted the tangible value of Federal Aid to States in highway construction, attention is called to the remarks of Secretary Wallace at a recent hearing before the House Roads Committee, and transmitted among other enclosures in this number of the *Digest*. The flat statement is made that Federal Aid investments have been returned already to the public, and Mr. Wallace explains why. One other point that came out in a spontaneous way was that the conduct of the Bureau of Public Roads under Mr. MacDonald's direction, has evoked less criticism than any other department of the government—a particularly gratifying statement to those engaged in highway work. Such testimony as Mr. Wallace gives furnishes a good support for the adoption of extended Federal aid programs and will aid State highway officials in organizing their departments upon a permanent basis.—*Highway News Digest*.



Cleaning up foundation prior to concreting, showing piles cut off to given grade (Bridge 84, Route 12, Section 1)  
(At right) driving sheeting with steam hammer for cofferdam at East Abutment (Bridge 88, Route 12, Section 1)



# The Highwayman



*The Highway Department has long needed such a building as the new service station at Fernwood. Being within three miles of the center of Trenton, the building is well located and it will help greatly in taking care of the rapidly increasing work of the Department.*

The Highway Department was very fortunate in securing for a nominal amount, 25 acres of land within three miles of the center of Trenton, just outside the city limits, in what is called Ewing Township. It was there decided to build this service station, the location of the property being between a hard surface road in front and a branch of the Reading Railroad in the rear, which enabled us to run a railroad siding into the property. This siding was constructed in a manner which permitted a drop track at the end, which facilitates unloading of machinery without having to block up.

The drainage of the property is taken care of by the method employed by the United States Army at their cantonments. Water supply was secured by driving a well, installing a pumping outfit, with a tank holding 100,000 gallons.

The service station main building is 100x406 ft. These dimensions and building were decided upon after our Department heads made several inspection trips looking over stations and garages within a 100 mile radius of Trenton. Of all locations we visited, we were unable to see anything that might meet the requirements of the Department. We did note, however, all the particular features of these stations and garages that we visited, and after designing our own building, we incorporated therein the features that we noted in these other stations.

The building is principally of steel and glass, with brick curtain walls, and a Monitor light shaft running through the center of the roof, which guarantees maximum light at all times at every corner of the building. The building is divided by a fire wall set back 240 feet from the front. The front is divided into the following departments:

The foreman's office of glass partitions with maple flooring and finished in oak to match the office furniture, about 40 ft. x 40 ft. All records of the Equipment Division will be kept there. Adjoining this is the wash room, toilets, showers and rest room, which is 40 ft. x 40 ft. Adjoining this room is the electric, magneto and repair department, which is about 20 ft. x 30 ft. Next is the carpenter and body shop where all wagon, wheelwright work, and all work pertaining to wood work on equipment is taken care of. This room is fire-proof, and is 30 ft. x 30 ft.

Next in line is the paint shop, also fire-proof, size 20 ft. x 30 ft., with all modern painter's equipment. Next to this is the welding and blacksmith shop, size 20 ft. x 30 ft. This shop is equipped with the latest type of acetylene and electric welding equipment, as well as blacksmith tools such as forges, machine hammers and blowers. Next to this is the stock room 79 ft. x 30 ft., with a mezzanine of the same size. There is a small hand elevator in the stock room to take care of the heavy stock to be placed on the mezzanine floor. There are approximately 7,000 feet of stock bins erected in the lower stock room for small parts for daily use.

The main floor of the building is paved with Kreolite Grooved Block on a concrete foundation. This eliminates fatigue on the men that are required to work around the equipment. On the opposite side of the building we have

a machine shop; next to this we have the unit shops, first the transmission department, then the differential department, and then a department to care for motors entirely. Next to the motor department we have what we call a special Ford department, where we rebuild and repair Fords. At the further end of the building we have a lye tank where, as soon as a unit is taken from the machine, it is submerged and all foreign particles removed therefrom, so that when the mechanics are required to work on same, it can be done with the least possible inconvenience, thereby assuring our men of being able to work on automobiles with clean shirts and collars.

We have also arranged for a metal department where all radiators are rebuilt and repaired, where metal equipment, such as metal bodies, metal cabs, etc., can be taken care of, designed, and built.

In the centre between these two layouts, we have a space of 40 feet clear for trucks and cars under repair, and is within easy reach of all the other departments.

Beyond the fire wall, we have a boiler room, coal bins, etc., the boiler room being equipped with three boilers and a stack of sufficient draft, same being 63 feet in height. We have also provision for hot water while the boilers are being used for heating only. We have a space beyond this fire wall 160 ft. x 100 ft. where cars, when completely overhauled, are kept and can be assigned to a job at a moment's notice, with the satisfaction that same are in first class condition.

We do not attempt to take care of dead storage in this building and are arranging to build an additional set of storage sheds for housing. The location of the building on the property is about 600 feet back from the front, and will be connected to the main highway with a concrete road. The interior of the building is painted white, except the exposed metal steel girders, which are painted dark green. The general surroundings of the whole structure are such as to produce efficient and satisfactory work from the men there employed.



## What Are You Worth?

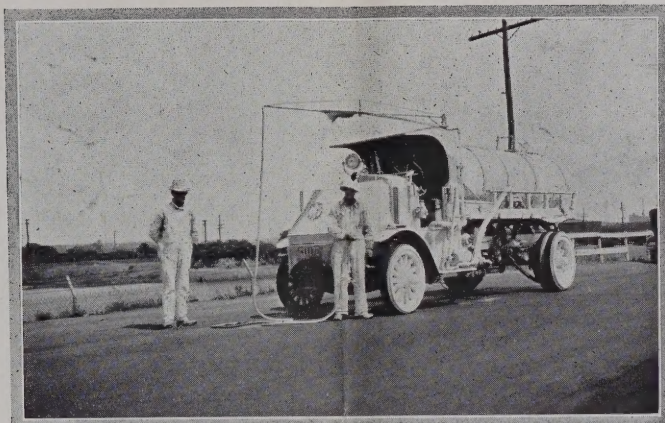
According to scientific investigation, the ingredients of a man are as follows:

- Fat enough for seven bars of soap.
- Iron enough for medium-sized nail.
- Sugar enough to fill a shaker.
- Lime enough to whitewash a chicken-coop.
- Phosphorus enough to make 2,200 match-tips.
- Magnesium enough for a dose of magnesia.
- Potassium enough to explode a toy cannon.
- Sulphur enough to rid a dog of fleas.
- Water enough for one Saturday night bath.

This whole collection is worth 98 cents, and that in a day when things are three times as high as they used to be.

The only additional ingredient is GUMPTION. According to the amount of *that* there is mixed in with the other things, you are worth 20c an hour, or \$20,000 a year.





*The HIGHWAYMAN has never done any "whitewashing" but we're glad to "show up" driver "Gas" Hoffman, and Hose Operators "Mickie" Dilts and Bill Lawler, of the Highway Department white washing crew (Route 4, south of Woodbridge)*

## Along Your Highways

*Under this heading is presented each month a description of the conditions along one or more of the main roads of the state. If you drive a car, you will be interested in following this series.*

### Route No. 4

Starting at Rahway thence through Woodbridge to Perth Amboy, the paving is in fair conditions. Constant watchfulness on the part of the Maintenance Division is necessary, however, in order to hold this route in shape to carry the heavy shore traffic. The pavement continues in fair condition through Perth Amboy.

Between Woodbridge and Perth Amboy the white-washing outfit was encountered. "Gas" Hoffman, the driver of the big Mack truck was telephoning from a nearby station. Photograph herewith shows the big Mack with its tank and swining arms, which allows the hose free play, in order that the operators, "Mickey" Dilts and "Bill" Lawler may coat the guard rail, fences and poles, with whitewash.

The accompanying picture shows the whitewash on the bottom of the poles to a height of about five feet. Every motorist knows the value of this kind of white marking for night travel.

The blue pole banding through Perth Amboy, is of distinct advantage to the traveler in guiding him through this city, where many turns are necessary in order to reach the approach to the Raritan River Bridge.

The Perth Amboy-South Amboy bridge, spanning the Raritan River, is a pile trestle frame structure, very difficult and costly to maintain. Sections of this bridge have been carried away at times by ice and severe river conditions, necessitating hurried emergency repairs. The draw span has reached a point where maintenance under present traffic conditions is impractical, it being inadequate to safely carry the loads permitted by law to travel the roads. The Highway Department has, therefore, made provision for the construction of a new bridge at a point west of the old bridge and paralleling same, where a shorter bridge can be built of modern design to provide for the heavy traffic of today.

This, of course, will entail the expenditure of a huge amount of money, estimated roughly at \$4,000,000. The Bridge Division of the Highway Department has investigated conditions at this point, in order to determine with some degree of certainty, the most economical type of construction. 24 pilings have been driven and a load of 1019 tons of pig iron has been imposed upon them in order that the type of construction may be determined. It is interesting to note that bed rock is encountered at an average distance of approximately 115 feet below the river high water mark. The reconstruction of this bridge will add greatly to the convenience, comfort and safety of the large volume of traffic using Route 4. From a point where the south approach to the new bridge will begin, through South

Amboy, a new concrete pavement recently built, greatly improves conditions through that city.

After leaving South Amboy a brick pavement which is a little rough, is encountered, continuing to Morgan; at which point a bituminous concrete pavement on a macadam base in very fair condition continues to Keyport. A recently completed bituminous concrete pavement through Keyport connecting with the concrete and bituminous concrete pavements built several years ago by Monmouth County, carries the traffic to a point known as the Betsy Ross Farm, three or four miles south of Keyport, where a new concrete pavement built by the Department is encountered, all of which pavement offers the traveling public an excellent highway from Keyport to Red Bank. The elimination of two overhead bridges over the Pennsylvania Railroad at Middletown is noteworthy. Instead of crossing the railroad and then recrossing, making a right angle turn in between; by following the northerly side of the railroad over new alignment at this point, a very bad condition is overcome.

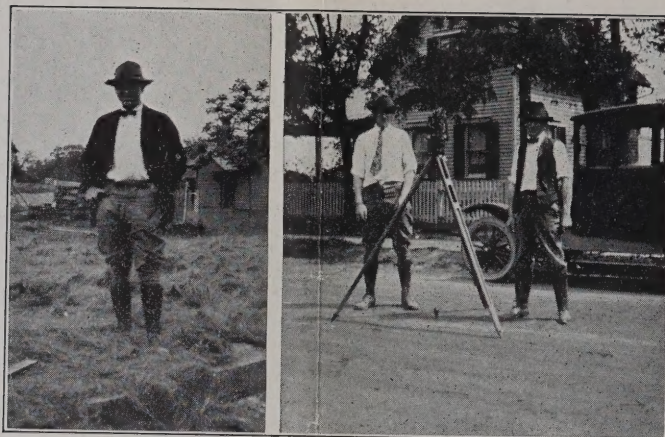
Entering Red Bank over the Shrewsbury River Bridge a noticeable improvement in the condition of this as well as other bridges on the highway routes is noted. The bridge is free from obstructions, and the floor planking securely fastened, so that one can go over the bridge without delay or annoyance. Considerable work has been done on this bridge in order to make it safe for loads as posted on the bridge approaches. The work of the Highway Department on highway bridges cannot be too highly commended. The majority of the bridges which were turned over to the Highway Department were in a deplorable and unsafe condition. In a good many cases in the last year or two, emergency repairs have had to be made after inspection by the forces of the Highway Department, in order to make the bridges safe temporarily, for traffic using them.

The paving under construction through Red Bank, on the Highway System, this year will add another important link to this route, connecting up with the bituminous concrete pavement on a concrete base between Red Bank and Eatontown, completed last year. With such good paving conditions one is able to observe and enjoy the beautiful scenery and fine homes through these shore resorts.

The construction under the reimbursement act of paving from Eatontown to West Long Branch, Shadow Lawn, Roseld Avenue Job, Borough of Avon, and Sea Girt Avenue in Manasquan, this year, will eliminate some of the worst of this shore highway from the intensive maintenance which is necessary for a secondary type of pavement under heavy traffic, as far south as the Manasquan



# The Highwayman



*The sporty looking gent at the left is Construction Inspector "Cap" (Ralph) Caprio. He is not playing golf, but "inspecting" on Route 4, Section 14.*

*The fellow who is all "set up" at the right is E. T. McNierney, with his assistant William Harris. They are checking up work on construction on Route 4.*

River. In crossing the Manasquan River Bridge the fill which is gradually growing longer from the Point Pleasant side towards the middle of the river will be noticed.

Funds are not at present available for the reconstruction of this important bridge, but in order to take advantage of the earth being excavated from the inland waterways canal at West Point Pleasant, the Highway Department contracted for the fill which will greatly shorten the length of this bridge when it is reconstructed. This far-sighted policy will, in later years, eliminate costly maintenance of a very long bridge, as the fill will almost cut down the length of this bridge one-half. Route No. 4, through Ocean County is at present practically all gravel, which has given the Department a serious job to maintain under the heavy shore traffic, particularly through the towns. Ocean County entered into an agreement to construct ten miles, under the reimbursement plan, of the 55 miles of State Highway in the county. This ten miles was distributed over the County, in order to take care of the sections most difficult to maintain and consequently the poorest riding. Beginning in Point Pleasant one mile is being constructed of Richmond Avenue. From Laurelton to and through Lakewood to a point approximately one mile south of Lakewood a concrete pavement is being constructed totaling 6.5 miles (funds for part of this improvement are being provided by Lakewood Township). The contractor, Ralph Earle, who has the contract for Section 14 and 15 from Laurelton end and at the time of writing had approximately one-half mile of pavement laid, including curve and intersection at Laurelton.

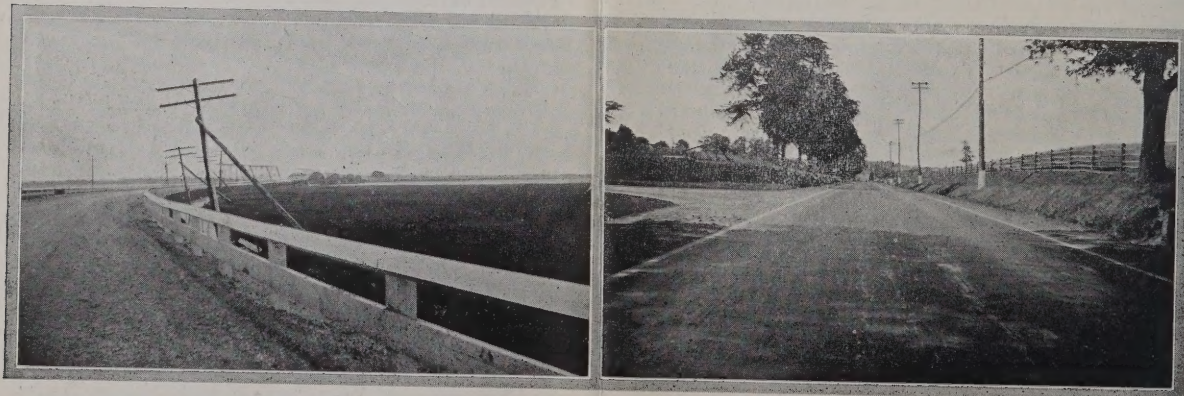
We came across Contractor Earle's mixing plant tied up on account of a broken cable on the mixer. If all such contingencies could be eliminated from construction work, life would be rosier for our friends the contractors. It hurts right in the pocket-book to look at a line of trucks tied up for a couple of hours.

1.5 miles of concrete pavement will be built through Toms River. As in Lakewood this pavement will go through part of the business district of this town, eliminating a very bad section of the highway from our problem of intensive maintenance. One mile of concrete pavement is to be constructed in Barnegat and one-half mile in Tuckerton. In both of these cases the pavement will go through the business section of the town.

Shortly after crossing the Ocean County line we come to the Job's Creek bridge which has been a source of danger for years on this much traveled route, due to the fact that a one way bridge existed right at a very sharp turn. This very bad point has been eliminated, however, by filling across the marsh at this point on an easier curve, and then constructing a new bridge of ample width.

Proceeding south through New Gretna we encountered another very bad corner which has been eased. In the photograph below the stakes and the telephone poles show how much the corner was "eased".

The construction of the Mullica River Section has been a God-send to travelers over this route. A very narrow road existed previously over these meadows which had settled for years, leaving a very bad road with inadequate bridges. Before this section was reconstructed test borings were taken, in order to determine the nature of the found-



*(Left) You can see—if your eyes are good—the new bridge constructed by Atlantic and Burlington Counties before the Route was taken over by the Department. (Mullica River section.) At right, the new Red Bank-Eatontown Road, completed this year.*





*Above, at left, is the part of the old road on Route 4, Section 9. Diverging to the right is the roughly excavated road bed for the new highway, which when completed will mark a great improvement in this section*

dation for the new road, and it was found that from twenty to thirty feet of mud existed, before a solid sand foundation could be reached. It was decided to use the old roadway and fill out to the required width on either side and keep filling until the material had penetrated to a stable foundation. This plan was followed out, using gravel pits on each end of the job to supply the material for the fill. While some settlement is still taking place, the fill is being made to bring the road back to grade practically as fast as it settles. This will continue until the road reaches its final settlement.

Another of the photos herewith shows the new bridge constructed by Atlantic and Burlington Counties before this route was taken over by the Department. The old bridge can be observed at the left in the foreground, at the south side of the Mullica River. Section 9 of this route is now under contract, with C. H. Earle doing the work. Grading operations are well under way. This section will eliminate the alignment, which is far from direct, through Port Republic and thence back through Smithville. The new route runs in a straight line between Mullica River and Smithville.

The picture taken at the "monument" shows another bad turn that is being eliminated by the new alignment, as the new right of way passes in back of this monument and thence crosses the old road again at a point further on, continuing over practically all new alignment to Smithville. A narrow township road existed part-way between the Mullica River and Smithville and the new highway at some places follows the old road.

The photograph at the top of page 9 shows a point at which the new rough graded roadway crosses the narrow old road, in order to secure better alignment than the old road offered. In addition to providing a much shorter

distance and better alignment for the State Highway, the farmers through this district will be able to market their products more easily over the new highway.

This section joining with the recently completed section from Smithville to Absecon, a warrenite bitulithic pavement on macadam base going by the famous and beautiful Sea View Gold Club grounds. At Absecon the route intersects the Philadelphia-Atlantic City road, which Route No. 3.



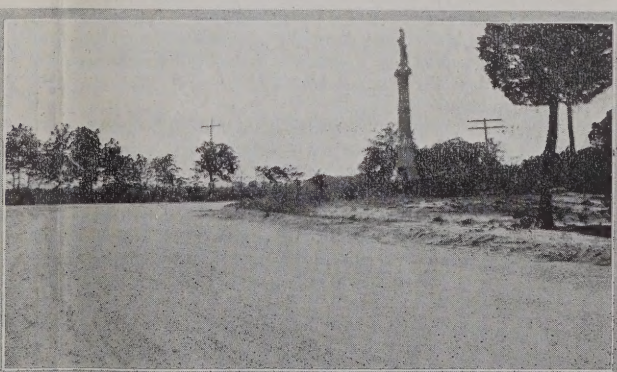
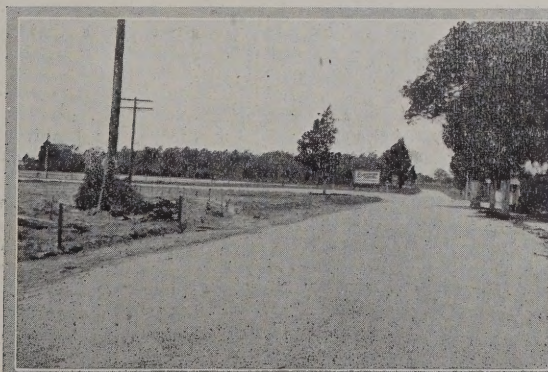
## Cost of Removing Grade Crossings

In 1921 only 399 railroad crossings were eliminated, the average cost being \$50,000. Records of the U. S. Bureau of Standards show that there are 251,939 railroad crossings in the United States.—*Colorado Highways*.

From the above figures one is enabled to readily see that it will require an enormous amount of work, money and considerable time to completely eliminate grade crossings.

Meanwhile the public must be educated to think and act "safety first" until such a time may come, when all "crossings" have been made "fool proof" by means of elimination.

Too much importance cannot be attached to this nation wide Safety First campaign.



*Above, (left) shows how the Department is trying to improve bad curves. The stake at the left of the telephone pole, shows how much the corner was "eased" (Route 4, New Gretna.) (right) Another bad turn that is being eliminated, the new alignment going back of the monument (Route 4, south of Mullica River.)*



# The Highwayman

## Stop Grade Crossing Accidents is Slogan

*President Harding Indorses American Railway Association's Plan—Says Grade Crossings Should be Abolished; But as this is Impossible Now, Nation Should Unite Behind Next Best Solution.*  
—1,072 Lives Lost Last Year.

American Automobile Association clubs in all parts of the United States are co-operating to the extent of their ability in the observance of the campaign against grade-crossing accidents, which is to continue four months under the auspices of the American Railway Association. The campaign is in line with the propaganda issued by the A. A. A. ever since its inception, and every club in the association is posting placards and otherwise warning its members to "cross crossings cautiously."

President Harding has given his hearty endorsement to the plan, in a letter written to the railway association. In this letter the President calls attention to the fact that "The ideal solution is elimination of grade crossings, to which all possible energy and means should be unceasingly directed," but in the absence of ability to do this, he praises the efforts of the railway association as the next best plan. The President's letter follows:

"The complete scope of such an effort would mean the saving of thousands of lives, the prevention of many more thousands of injuries, and incidentally, the prevention of a great property loss."

### *Ultimate Aim Should Be Absolute Elimination of Grade Crossings*

"Of course, the ideal solution is the elimination of grade crossings, to which all possible energy and means should be unceasingly directed. But the extent of our country and its railroad mileage makes apparent that not for many years of utmost effort could this be effected.

"There should be constant pressure for elimination of the danger spots, particularly in the more populous areas pending which there is need for just the kind of preventative effort that your association is planning.

"Among these measures the most effective would seem to be to arouse in the minds of drivers a sense of their personal responsibilities. When thoughtlessness is allowed to usurp the place of vigilance, as too often happens, the scene is set for tragedy. Reminders and still more reminders of the need for caution at railway crossings are needed.

"Surely the effort you are undertaking is appealing and it ought to have the most generous and general support."

### *Three People Killed at Grade Crossings EVERY DAY*

Statistics shows that 1,072 persons were killed and 4,818 injured in 1921 by grade-crossing accidents, a great majority of the cases involving automobiles. These figures were compiled by the Interstate Commerce Commission and are authentic. This commission's figures show that such accidents have shown an alarming increase during the past few years with 1921 as the high mark.

The safety section of the American Railway Association started in about a year ago to teach safety-first rules among its employees and the success attained by this effort has led to the broader campaign.

The American Automobile Association has been preaching carefulness at grade crossings ever since it was organized and is still preaching that slogan today. Officials of the A. A. A. have promised the warmest kind of support for the railway association's campaign, and it is hoped to effect changes in present practices that will result in the ultimate saving of thousands of lives.—*American Motorist.*

## Avoidance of Accidents

Division Engineer James Kinkead of the Pennsylvania Railroad sent the State Highway Engineer a pamphlet showing the fatalities on the right of way of railroads of the country, largely due to carelessness. Mr. Kinkead said in sending this pamphlet to us, "I thought you might be interested in seeing what the terrible record is for trespassing on railroads." A few extracts from this pamphlet

will be of interest to readers of the HIGHWAYMAN, because it will call our attention to the accidents resulting in serious injury or fatalities which occur on the highways of the country. There is not available statistical machinery for securing and compiling the information on the subject of accidents upon the highways, so we will have to use the railroad information as a basis for our thought.

"During the past ten years, 84,000 people have been killed and injured in this country while trespassing or walking on railroad tracks and bridges and unlawfully riding on freight and passenger trains."

"Nine thousand (9,000) of this great army of killed and injured were children under 14 years of age; 12,000 were between 14 and 21 years; 9,000 were hoboes and tramps and the remaining 54,000 were useful members of society, including clerks, industrial workers and professional people, the majority of whom lived in the communities in which they met death or injury."

The pamphlet sums up the railroad accident situation by a list of Don'ts. All of these relate to pedestrians, except one, which we are quoting herewith and which applies to drivers of vehicles as well as pedestrians.

### *"Stop, Look and Listen"*

"Before crossing tracks at crossings, Stop, Look and Listen to see if a train is coming, and after a train has passed make sure no other trains are approaching in either direction."

One of the most serious phases of the danger upon highways in our opinion is the use of the edge or center of the pavement at night by pedestrians. For the benefit of those who have not driven a car at night we will say that while automobiles are usually equipped with strong headlights, it is often very difficult to see a pedestrian until the machine is too close to offer an opportunity to the driver to turn out. This is particularly true in foggy or rainy weather, or when there is traffic in both directions upon the road. The lights from machines going in the opposite direction blinds the driver to some extent, even though the candle power of the lights and the diffusing lens may comply with the law, to such an extent that pedestrians are in danger if they are not constantly on the alert to avoid the oncoming vehicles. Motorists have been urged to observe every precaution from a dozen different sources of information and educational propaganda, so we need not go into the details here.

### *Directions For Crossing a Railroad Track*

When approaching a grade-crossing of a steam or electric railroad slow up, so that you can see far enough in either direction down the railroad, to insure your crossing the same before a train or car could possibly reach you. It would be the part of wisdom to change to second speed in order to avoid the possibility of stalling on the tracks, at points where a long sight down the railroad in either direction is impossible. A flagman or gateman at a railroad crossing is a measure of protection to you, but don't rely entirely upon them. Check up the flagman or gateman before crossing. You might be able to prove that the gateman was at fault, but the chances are greatly against you doing so in this world.

### *To Pedestrians*

Don't try to maintain your right of way on the road either day or night in the face of an on-coming automobile. Remember you have a second to gain and only your life to lose. The driver may be as determined to have his way as you are, in which case, something has got to "bust". The driver at night may not see you and even though he does see you in the daytime you will have more chance of getting satisfaction from a "road-hog" if you take his number, than if you let him run over you.

Don't ever cross the street without looking in both directions. Don't walk suddenly out from behind a vehicle stopped along the street or road. Don't allow your children to play in the street, if it is in any way possible to avoid it. If it is necessary for them to go upon the street use every means possible to impress upon their minds the danger they will encounter from traffic and how to avoid same.





In front of Seaview Golf Club, near Atlantic City, (Route 4)

## **Warrenite—Bitulithic Pavements Have Stood Up Under Heavy Traffic For 15 Years**

The test of the paving is in the riding—and the cost of upkeep.

Upon *either* of these points we invite your critical investigation.

Some of the oldest paved roads in New Jersey were laid under the Warren patents.

Many of these have been in constant use *under heavy traffic* for fifteen years. They are still in excellent condition.

*"The Best Road You Can Buy Is the Cheapest in the End."*

**Warren Bros. Company**

District Office 50 Church Street, New York City, N. Y.

## ***The Delaware River Quarry & Construction Company***

# **Largest Producers of Crushed Trap Rock in New Jersey**

ESTABLISHED THIRTY YEARS

**Main Office: 21 Bridge Street, Lambertville, N. J.**

Branch Office

National Bank Bldg., New Brunswick, N. J.



# The Highwayman



Benson Street, Glen Ridge, New Jersey, "Tarvia-E" 1919 and 1920

## Are your roads in rags, or well dressed?

"The apparel oft proclaims the man."

And Shakespeare might well have added, "The road oft proclaims the town;" for good roads are the one unfailing sign of a progressive community.

Tarvia Roads are not only good roads—they are also *economical roads*.

Whether used for new construction or for resurfacing worn-out macadam, the moderate cost of Tarvia-macadam means a substantial saving in first cost, while the saving in maintenance expense, compared with other types of permanent construction, is proportionately even greater.

Tarvia roads are dustless and mudless in

all kinds of weather. They are waterproof and so are unaffected by the biting frosts of winter. The melting snow finds them smooth and firm—all ready for the hard summer traffic.

For your every road problem—new construction, repairs and maintenance—there is a grade of Tarvia and a Tarvia treatment that provides an economical and satisfactory solution.

Hundreds of progressive communities in every part of the country use Tarvia for all their road work. They have found that Tarvia roads "make the going easy" for both the travelling public and the taxpayer.

**Tarvia**  
For Road Construction  
Repair and Maintenance

Tarvia is a coal tar preparation made in a number of grades to meet varying road conditions. It is the most popular road material in America and has solved the problem of low cost, traffic-proof roads and pavements for hundreds of towns throughout the country.

C. C. RANDOLPH  
Telephone 2466, PLAINFIELD, N. J.  
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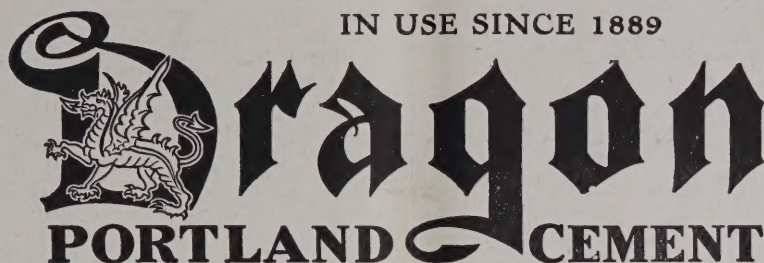
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## STRENGTH and UNIFORMITY

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302 Broadway, New York, N. Y.

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## Which Car Is Best?

You have your opinion.

But what car isn't BETTER on a Concrete Road?

The car with the highest gas mileage has *higher* mileage on Concrete.

The car with the quickest "pick-up," picks up *quicker* on firm, unyielding Concrete.

The least expensive car to drive is *less* expensive on Concrete. And the gritty Concrete service is skid-proof. Motorists know these are facts—and motorists, if they insist, can get the kind of roads they want.



*Our Booklet R-3 tells other interesting things  
about Concrete Roads. Write for your copy.*

**PORTLAND CEMENT ASSOCIATION**

347 Madison Avenue, New York

*A National Organization to Improve and Extend the Uses of Concrete*

Offices in 23 Other Cities



## GLUTRIN

### Four Reasons Why All Gravel Roads Should Be Treated With Glutrin

First: Glutrinized gravel roads are hard all the year round.

Second: Glutrinized roads shed water—and for that reason they do not rut up during the winter and Spring.

Third: Glutrin is the best binder yet discovered for gravel stone, sand-clay, or slag or earth roads.

And finally: Glutrin is not only the best binder, but by far the most economical.

#### *What Local Authorities Think of Glutrin Road Binder:*

*Taken from the Daily Pioneer of Bridgeton, N. J., Tuesday, February 14, 1922*

##### "SHOWS VALUE"

"Last fall the state highway department caused west Commerce street to be flushed with glutrin, an oil-like preparation which has for its object the laying of the dust and preventing the gravel on the roads from being cut up with the traffic. The glutrin application also has had the effect of giving the street a surface which turned

much of the water, and the results show a very much improved condition this winter. While most of the gravel streets are soft with mud, west Commerce street is comparatively firm and free from mud, and much smoother in consequence. The experiment would seem to indicate that the glutrin application greatly improves dirt roads."

Glutrin has been manufactured by us in our own plants for over 15 years. We have our own tank car line in which to deliver the product. The material used in New Jersey was applied by Mr. M. R. Young, Trenton, N. J., with pressure distributors especially built to handle this product.

Send us your name, and let us put you next to Glutrin!

**Robeson Process Company**  
Fifth Avenue Building, 200 Fifth Avenue, New York





(Courtesy Portland Cement Association)

## When Vulcan Made 'em, They Lasted Forever

Vulcan was the blacksmith of the Gods on high Olympus.

The things he forged in his mighty smithy lasted forever.

Neither time nor tempest, age nor rust, could

destroy their everlastingness!

In that, they were similar to roads built of "Vulcanite"—the cement that is made in our giant plant at Warren Co., N. J., with its capacity of 2,000,000 barrels a year.

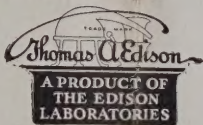
*"Let's get together and talk Cement"*

### VULCANITE PORTLAND CEMENT CO.

PHILADELPHIA

BOSTON

NEW YORK



## "EDISON"

The Word that means "Cement Satisfaction"

Why not put your cement troubles up to Edison?

Why fret and worry and lose money on slow deliveries, when we can ship your order the same day as received?

Do you realize that Edison Cement is produced right here in New Jersey; and that we can ship 150 carloads a day?

*"Edison service Cement when you want it!"*

### EDISON PORTLAND CEMENT CO.

NEW YORK

BOSTON

PHILADELPHIA

PLANT: NEW VILLAGE, N. J.



# ALONG THE ROAD



Designed and copyrighted, 1922 by the Sales Printing Corporation, New York  
 You have seen this poster before. Look at it again—closely.  
 Imagine yourself in the driver's place—IT HAPPENS THREE  
 TIMES EVERY DAY!  
 "Ca canny" at the Crossing!

## Making Road Crossings Foolproof

All over the United States posters are displayed in conspicuous places pleading for carefulness on the roads with reference to the crossing of steam railroad tracks. A "Campaign" is on in an effort to make the crossings less deadly. It would seem from the wide spread of these effectively designed pictorial appeals that everybody in this country by now has had the danger of grade crossings brought directly home and the need of care emphasized to him. Yet the death toll continues.

It is necessary to make the crossings foolproof. The only way to do that is to make it impossible to cross them, and the only way, in turn to do that is to carry the roads over or under the tracks. It will take a long time to make these changes throughout the crowded part of the country, but meanwhile every grade crossing in the United States, especially in the neighborhood of cities, should be "protected." There should be some way of reminding the heedless ones, and the forgetful ones, and the reckless ones, that death lies ahead.

If those killed at the grade crossings were only the drivers who take the chances there would not be the same feeling of urgency for the correction of these conditions. But for every driver killed there are two or three or half a dozen innocent ones sacrificed through his folly. It is for the sake of these innocent passengers in motor cars,

sometimes the families of the drivers, that the demand arises for speeding up the work of undercutting and overpassing, and meanwhile for the erection of gates and the establishment of flagmen by night and day at all the frequented crossings.

The poster appeal for the people to be careful is good as far as it goes. It cannot be too widely distributed or too conspicuously displayed. But it is not enough. The grade crossings must be made foolproof, and it is gratifying to note that such a step is now provided for in Federal Aid legislation.—*Highway News Digest.*

\* \* \*

## To the Flivver Boob

Your flivver boob may be a rube,  
 Or he may be from the city,  
 From fields of hay, or from Broadway,  
 He's the same guy—more's the pity!

He'll never stop for a traffic cop;  
 He thinks it's very witty  
 To "step on the gas" other Boobs to pass;  
 To "make" a close crossing, is gritty.  
 To "save" some kid, by a swerve and a skid,  
 He describes as "very pretty"—  
 Oh, we wish him well; may he stall in —!  
 Is the hope of our little ditty! —F. F. R.



First Observant Fisherman: "Say, Bill, what's the difference between a motor truck an' a tractor?  
 Second Observant Fisherman: "That's easy—the tractor plows up the FIELDS."